



YEARS OF CRT/N

1989 - 2019



August 2019

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MESSAGE FROM THE CHAIRPERSON

The Centre for Rural Technology, Nepal (CRT/N) has been a pioneering organization in development, promotion and dissemination of rural and renewable energy technologies in Nepal. Within the period of 30 years, CRT/N has been successful in implementing a number of rural friendly energy projects and programs mainly improved Cookstoves, solar cooker, solar dryer, improved water mills with community electrification, hydraulic ramp pump, women economic empowerment, eco-village development etc. with the support from the Government Institutions, National and International Development Agencies. These activities have certainly become attributable to the quality improvement in the rural communities; highlighting more on women and children.

Besides, CRT/N has been actively involved in undertaking Research and Development (R&D), collaborative networking, advocacy and lobbying, effective Monitoring and Evaluation (M&E), information dissemination and policy feedbacks. The best practices and lessons learned are documented and disseminated through publication of reports and newsletters both nationally and internationally.

It gives me an immense pleasure to congratulate the entire team of CRT/N for successfully completing its 30 glorious years of service showing their merit-based efforts and continuous devotion towards mainstreaming gender in development programme, improving access to green energy to the marginalized and rural communities through availability of sustainable and affordable energy services, appropriate technologies to reach the unreached.



I would like to take this opportunity to thank the Government Institutions, Development Agencies and all the key stakeholders for their kind supports and cooperation for executing projects and programs. Finally, the staff members who are the asset of the CRT/N deserve appreciation for their honesty and determined efforts put forth for achieving the impressive results.

Ananda Shova Tamrakar, PhD

Chairperson, Governing Board

MESSAGE FROM THE EXECUTIVE DIRECTOR

Established in 1989, Centre for Rural Technology, Nepal (CRT/N) aims at developing, promoting of rural renewable energy and appropriate rural technologies in Nepal through Improved Water Mill (IWM), Improved Cookstove (ICS) and Hydraulic Ram Pump via building capacity. CRT/N prioritizes the rural communities especially the women and children in improving their quality of life through the access of energy, reduction in drudgery, indoor smoke inhalation and improvement in water and sanitation. Besides these endeavours, CRT/N has contributed towards increasing income and self-employment opportunities through reliable and affordable energy services and appropriate technologies in rural Nepal.

It is my great pleasure to state here that CRT/N has successfully completed its 30 years journey by August 8, 2019. During this period, CRT/N journey has accomplished a number of projects/programme and contributed to the development, promotion and expansion of renewable energy sector and appropriate technologies in Nepal. Moreover, CRT/N has helped to promote Eco-village Development, Development of Women-led Enterprises, Green and Inclusive Energy Development, Mainstreaming Gender, Climate Friendly and Renewable Energy Technologies among the rural communities and their members benefitting the large number of rural populations leading to decent living.

CRT/N would continue its commitments to further engage with all the levels (Government, Development Organizations, Communities, Academic Institutions, Media, Network Partners, Key Stakeholders, other Sectorial Experts etc.) to upgrade and upscale the ongoing initiatives as well as explore new programmes and initiatives in the coming year to serve the rural communities.

On behalf of CRT/N and my own, I extend my sincere gratitude for the genuine cooperation and support rendered by:

The Government of Nepal: Alternative Energy Promotion Centre (AEPIC), Ministry of Energy, Water Resources and Irrigation (MoEWRI), Provincial and Local Government, Rural and Urban Municipalities, Social Welfare Council (SWC), and other Government and Educational Institutions.

The Partner Organizations: National Association of Community Electricity Users Nepal (NACEUN), Nepal Forum of Environment Journalists (NEFEJ), Renewable Energy Confederation of Nepal (RECON), Indoor Air Pollution and Health Forum, Nepal (IAPHF), Practical Action Nepal and Practical Action Consulting (PAC).



The Development Organizations: Energizing Development/ German Corporation for International Cooperation (GIZ/ EnDev), Netherland Development Organization (SNV), International Network on Gender and Sustainable Energy (ENERGIA)/HumanistInstituteforCooperationwithDeveloping Countries (Hivos), United Nations Development Programme (GEF/UNDP), Alliance for Clean Cookstoves (ACC), Danish International Human Settlement Service, Denmark (DIB), Swedish International Development Agency (SIDA), International Network for Sustainable Energy (INforSE Denmark), the Department of International Development (DFID), Asian Development Bank (ADB), World Bank, Winrock International Nepal, International Centre for Integrated Mountain Development (ICIMOD), the International Union for Conservation of Nature (IUCN), Renewable World (RW), Nordic Development Fund, Kathmandu University, Delucia & Associates USA and other development institutions.

I am also grateful to contributing organizations, dignitaries and individuals for their continued support for development, modernization and expansion of the renewable energy and appropriate technologies sector in Nepal. I appreciate the support provided by the present and past General Assembly Members, Governing Board Members and owe thanks to consultants and all the hardworking staff members for their commitment, dedication and contribution during the 30 years period of CRT/N.

Ganesh Ram Shrestha

Executive Director

ABBREVIATIONS

ADB	Asian Development Bank
AEPC	Alternative Energy Promotion Centre
CCA	Clean Cooking Alliance
CRT/N	Centre for Rural Technology, Nepal
CREE	Community Rural Electrification Entity
CSOs	Civil Society Organizations
DFID	The Department of International Development
DIB	Danish International Human Settlement Service
EnDev/GIZ	Energizing Development/ German Corporation for International Cooperation
ENERGIA	International Network on Gender and Sustainable Energy
EUCs	Electric Users Cooperatives
GEWNet	Gender, Energy and Water Network
GESI	Gender Equality and Social Inclusion
GoN	Government of Nepal
Hivos	Humanist Institute for Cooperation with Developing Countries
IAPHF	Indoor Air Pollution and Health Forum, Nepal
ICIMOD	International Centre for Integrated Mountain Development
ICS	Improved Cookstove
INforSE	International Network for Sustainable Energy
ISO	International Standard Organization
IUCN	International Union for Conservation of Nature
IWM	Improved Water Mill
NACEUN	National Association of Community Electricity Users Nepal
NEA	Nepal Electricity Authority
NEFEJ	Nepal Forum of Environmental Journalists
M&E	Monitoring and Evaluation
MoEWRI	Ministry of Energy, Water Resources and Irrigation
MoST	Ministry of Science and Technology
PAF	Poverty Alleviation Fund
PEP	Performance Evaluation Progress
R&D	Research and Development
RECON	Renewable Energy Confederation of Nepal
RETs	Renewable Energy Technologies
RTKC	Regional Cookstoves Testing and Knowledge Centre
SDGs	Sustainable Development Goals
SIDA	Swedish International Development Agency
SNV	Netherland Development Organization
SWC	Social Welfare Council
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WHO	World Health Organization



CHAPTER 1

INTRODUCTION

PREFACE

Centre for Rural Technology, Nepal (CRT/N) is a professional non-governmental organization engaged in developing and promoting appropriate rural technologies. CRT/N aims to achieve the basic needs and improve the livelihood of rural population especially in energy, water and gender equality sectors. Established in August 1989 under the Company Act, CRT/N has been re-registered with the Government of Nepal (GoN) under the Social Organisation Registration Act 2034 since October 1998. The organization is actively engaged in capacity building, advocating, lobbying and upgrading traditional technologies as well as developing new technologies with diversified and versatile applications to reach rural marginalized groups. CRT/N goal over last 30 years is to ensure that the people living in rural areas of Nepal have access to energy and water integrating Gender Equality and Social Inclusion (GESI).

Energy Access in Nepal

Nepal is one of the least developed countries with more than 80% of its population residing in the rural areas. Per capita energy usage (often viewed as a key index of the development) in the country is far less than the global average per capita energy usage. Currently, 44% of the population has access to electricity, 3.2% of the population uses renewable energy, and the rural electrification accounts for only 18%. Nearly 4

million households still use traditional cooking stoves and firewood which has several environmental and public health issues (MoEWRI, 2018).

Challenges

Over the past years, Nepal has made impressive progress in its energy development, yet there are still 2.1 million people living without access to electricity and 2.3 million people with no access to clean water (WHO/ UNICEF, 2017). Nearly all fossil-derived fuels consumed in Nepal are imported in a refined form, and the perpetual increase in petroleum imports has adversely impacted the existing fragile economy of the country. Despite a huge potential in harnessing various renewable energy resources such as hydropower, solar power, wind energy and biofuels/bioenergy, these resources have not been sustainably captured due to geographical, technical, social, political, environmental and economic reasons. Without proper energy infrastructure in place, critical areas like health, water, education and economic growth are also affected, holding back the country's development.

Hence, CRT/N prioritizes renewable energy resources and technologies (RETs) such as micro-hydro, solar power, biofuel/bioenergy, improved Cookstoves, and improved water mill to improve the livelihoods of the rural communities. It also highlights the opportunities and barriers for the development of RETs.

Social Challenge



The country faces serious socio-cultural issues, where common beliefs and practices affect access to energy especially to women and children. In rural communities, on average, women and girls spend four hours a day collecting fuel wood and water for their families, hampering their development.

Lack of Cross-sector Coordination



Despite a number of strong development actors in the energy sector, effective collaboration, robust planning and rigorous processes for gathering useful data and monitoring progress are still lacking.

Economic Challenge



There is a direct link with the financial constraint as most of the women hold either none or very little economic assets. Though, the Government provides financial support through subsidy up to 60%, the remaining costs for renewable energy systems for communities are still unaffordable for the poor and marginalized groups.

Health Challenge



Due to traditional cooking stoves and firewood practices, everyday more than 20 Nepali, especially women and children are dying due to indoor air pollution caused by the use of traditional Cookstoves (WHO, 2016)

Geographic Challenge



A principal factor is related to remoteness followed by the scattered settlements where by consultations including decisions are made in market centres and thus excluding the rural marginalized groups especially women.

Disaster Prone Region



Nepal is the fourth most vulnerable country in the world to climate change, and its diverse terrain leaves it at risk from natural disasters such as earthquakes, floods and landslides.



Photo: Mahesh Shrestha

VISION

To be renowned as a professional/ innovative organization in renewable energy with appropriate technologies as well as a knowledge centre by delivering quality services to rural communities for enhancing their sustainable livelihoods.

MISSION

To develop, promote and disseminate environmentally sound rural/appropriate technologies and strengthen capability of rural communities in creating better opportunities through mobilisation of local resources to improve their livelihood conditions.

THEMES

- » Total Access to Energy (ICS, IWM, Hydram, Solar Dryer/ Cooker)
- » Household Air Quality
- » Gender Equality and Social Inclusion in Energy Sector
- » Community Water Management and Sanitation
- » Climate Change (Adaptation and Mitigation)
- » Productive End Use Energy (Employment and Income)

OBJECTIVES



Develop, promote and disseminate affordable, sustainable, reliable and inclusive **renewable energy systems** and **technologies** to meet the basic needs of the people and improve their quality of life.



Conduct **adaptive** and **action-oriented research** on indigenous and improved rural/appropriate technologies for sustainable development.



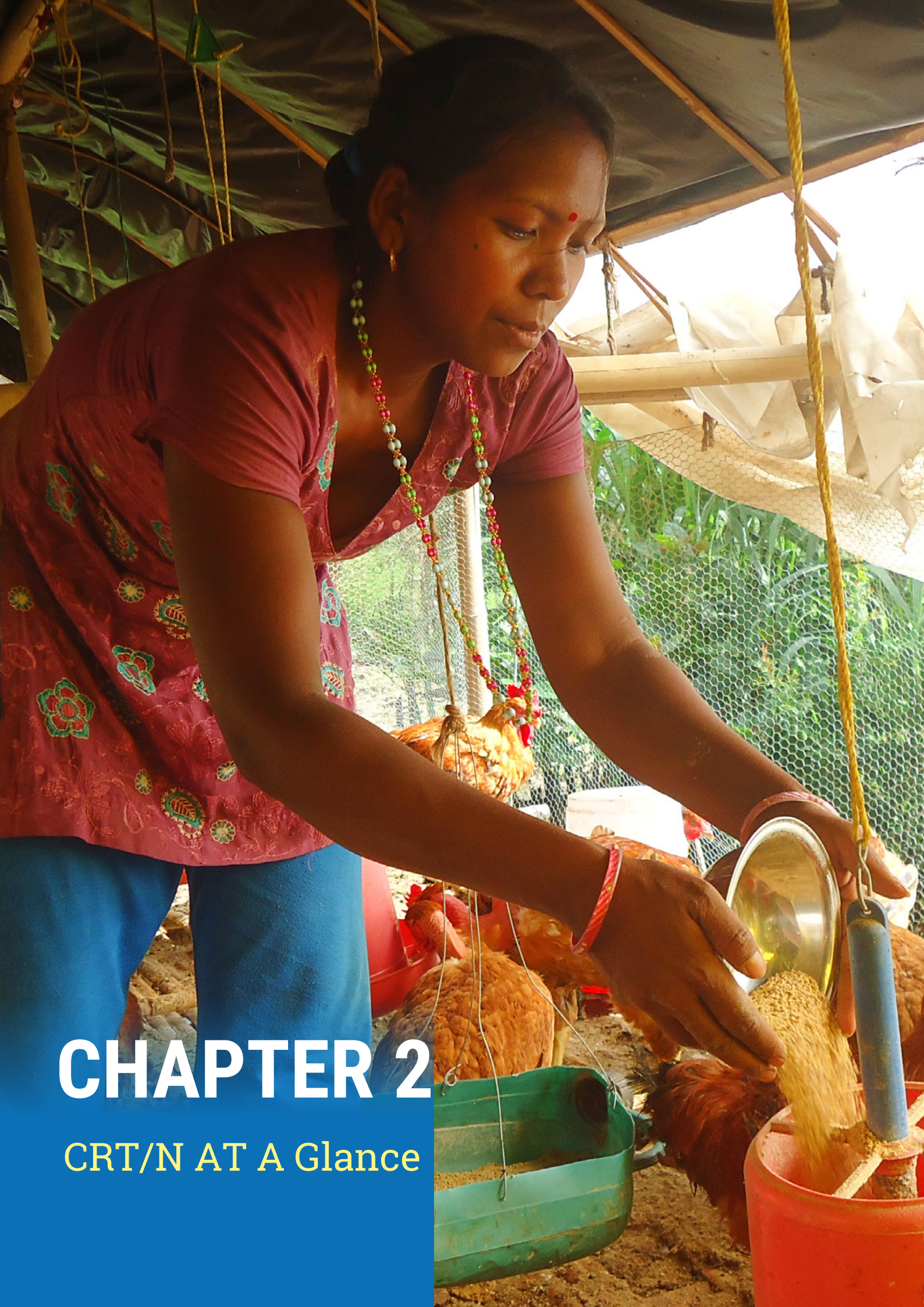
Build capacity and transfer technical information and know-how on production, installation and management of rural/appropriate technologies and empower to increase income generation of targeted groups.



Provide **technical support** and **consulting services** in the field of rural energy and environment conservation.



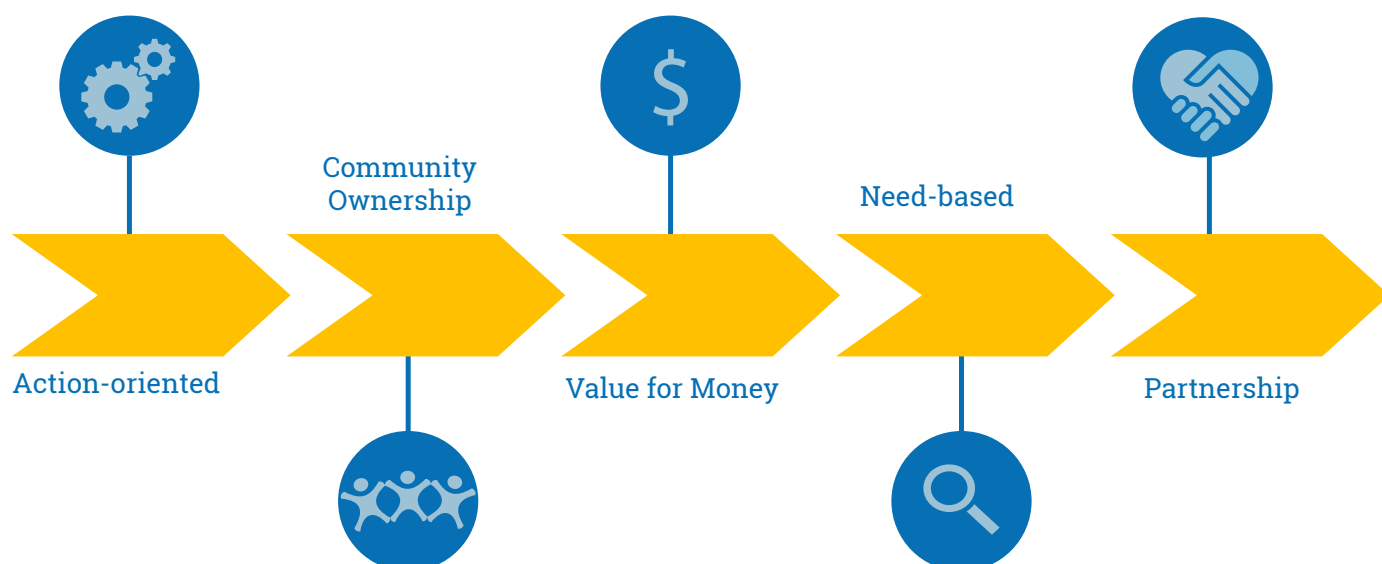
Mainstreaming gender equality and **social inclusion** in energy and water sectors at all levels



CHAPTER 2

CRT/N AT A Glance

APPROACHES



CRT/N's 30 Years Journey

During its 30 years of existence, CRT/N has completed different types of programmes/projects with support from various local, national and international organizations. A list of selected programmes/projects is given below that highlights the range of technologies and support organizations CRT/N has worked with.

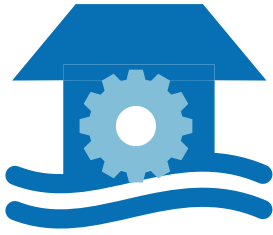
YEAR	KEY EVENTS/PROGRAMMES/PROJECTS
1989	<ul style="list-style-type: none"> Registered as a private company
1990	<ul style="list-style-type: none"> Conducted feasibility study of Alternate Energy Project in Jumla, Surkhet and Dailekh districts for CECI Provided technical support to "Environment Project" undertaken by WDD and ADB/N in 16 districts for UNICEF from 1990 to 1992 Worked on Ghatta for the first time by assessing the Ghatta Project in Dhading district for GATE/GIZ
1991	<ul style="list-style-type: none"> The first project it implemented on Ghatta was the "Dissemination of Improved Water Mill in Rural Villages of Nepal" supported by GTZ, which was implemented in Kavrepalanchowk and Sindhupalchowk districts from 1991-1993
1992	<ul style="list-style-type: none"> Worked on micro hydro for the first time by conducting feasibility study of a micro hydro project in Jumla Evaluated an irrigation project in Dhading district for DDDP/GTZ Conducted case studies of selected enterprises in Dang district
1993	<ul style="list-style-type: none"> First training on ICS was conducted in Kavrepalanchowk district First orientation/demonstration on solar cooker/dryer was conducted in Bhaktapur district for BCP/UNICEF Conducted training on Installation and Operation of ICS and IWM in Humla district for USC Canada Conducted Participatory Training Needs Assessment on Irrigation and Conduction of Training in Palpa, Chitwan and Sindhupalchowk districts for IIMI
1994	<ul style="list-style-type: none"> Conducted assessment of Biogas Latrine Project in Chitwan and Kaski districts for UNICEF Developed a publication on "Successful Case Stories of Small Farm and Off-farm Activities in Nepal for IUCN

1995	<ul style="list-style-type: none"> Launched Action Programme for Strengthening Improved Cookstove Network in Nepal supported by Asia Regional Cookstove Programme, Indonesia Provision of Technical Support Services for the Promotion and Dissemination of Sulav Latrines for PLAN International Impact assessment of Improved Ghatta and other Micro-hydro technologies for ITDG
1996	<ul style="list-style-type: none"> Developed a "Manual of Technology with Implications of Mountain Tourism" for ICIMOD Organized the Asia Regional Kitchen Improvement Workshop in Nepal together with ARECOP, Indonesia Conducted Research Study on the status of Nepalese Kitchen and scope for Improvement for RWEDP/FAO Conducted Study on Institutional Strengthening in Rural Energy Planning and Implementation in Nepal (jointly with deLucia and Associated, USA) for Asian Development Bank
1997	<ul style="list-style-type: none"> Assessed implications of national policies on renewable energy technologies and energy efficient devices for ICIMOD
1998	<ul style="list-style-type: none"> Prepared profile of institutional stoves for Asia Regional Cookstoves Program (ARECOP) Provision of Technical Support Services for Operational Demonstration and Installation of Improved Water Mills for Eco-Himal
1999	<ul style="list-style-type: none"> Implementating Partner of the National ICS Programme for AEPC/ESAP Developed and implemented community level energy action programme in Syangja district for ICIMOD Organised national workshop on local water harvesting schemes for ICIMOD
2000	<ul style="list-style-type: none"> Initiated "Action Programme for Strengthening ICS Network in Nepal" supported by ARECOP, Indonesia Test demonstrated Propeller Turbine 200 (PTO2) technology developed by NHE
2001	<ul style="list-style-type: none"> Launched the "Strengthening organizational capacity through Ghatta Owners' Association (GOA)" in Kabhrepalanchok and Makawanpur districts for ICIMOD Launched promotion and dissemination activities on solar parabolic cookers in Dolpa district
2002	<ul style="list-style-type: none"> Initiated inception phase of Improved Water Mill Programme in Kabhrepalanchok and Makawanpur districts with support from SNV Nepal Initiated "Women in Energy and Water Management" Project in Dhankuta and Palpa districts with support from UNEP-ICIMOD Launched first project on ghatta electrification in Kabhrepalanchok district with support from LUTW, Canada Initiated Gender, Energy and Water Network (GEWNet) supported by International Network in Gender and Sustainable Energy (ENERGIA) Prepared Community and Institution Mobilization Manual/Guidelines for Decentralized Energy Management Initiatives for ESAP/DANIDA
2003	<ul style="list-style-type: none"> Initiated implementation phase of Improved Water Mill Programme (IWMP)
2004	<ul style="list-style-type: none"> Developed Women and Technology Manual for ITDG Initiated "Enhancing Energy Security and Rural Entrepreneurship through Energy Intervention: Capacity Building of Rural Women on Solar Dryer" project with support from SARI/E SGP in partnership with AIWC/India Field Testing Community and Institution Mobilization Manual/Guidelines for Decentralized Energy Management Initiatives supported by ESAP/DANIDA Participated at NGO Capacity Building for Poverty Reducing Sustainable Energy Program in South Asia for INforSE

2005	<ul style="list-style-type: none"> Launched "Capacity Building on Integration of Energy and Rural Development Policy and Programmes" in partnership with WECS and supported by UNESCAP/Bangkok Participated at "NGO Capacity Building for Poverty Reducing Sustainable Energy Programme in South Asia" with support from INforSE Initiated "Solar Cooker for Eco-tourism Development in Nepal" project with support from WISION/Germany
2006	<ul style="list-style-type: none"> Conducted Study on IICS in ICRC Compound for ICRC
2007	<ul style="list-style-type: none"> Initiated first voluntary market Carbon Project on ICS in Chitwan district pre-financed by TOCC/UK Initiated "Development and Pilot Testing of AFPMA" using the Ashden Awards money Established and operated Asia Regional Secretariat for ENERGIA
2008	<ul style="list-style-type: none"> Prepared Gender and Social Inclusion Strategy for AEPC/ESAP Conducted National Training Workshop on Mainstreaming Gender Concerns in Energy Projects in Nepal supported by REDP, BSP and ENERGIA
2009	<ul style="list-style-type: none"> Initiated CDM Carbon Project on ICS in six Terai district with pre-financing support from Egluro/TOCC/UK Launched MDFH project in Dolakha district with support from SARI/E Joined South Asia evidence-based policy in development Network managed by CEPA/Sri Lanka as Steward
2010	<ul style="list-style-type: none"> Conducted Training/Demonstration of Renewable Energy and Appropriate Technologies in Afghanistan supported by UN-HABITAT Piloted Hydram technology in Ramechhap district with support from SARI/E, USAID Jointly initiated a Study on Climate Change Energy Access and Technology Transfer with support from ETC Foundation
2011	<ul style="list-style-type: none"> The Gold Standard CDM project "Efficient Fuel Wood Cooking stoves Project in Foothills and Plains of Central Region of Nepal" has been registered by the UNFCCC (Regd. no 4530) Carried out study on Advocacy for Gender Sensitive Energy Policies in Nepal in consortium with Indoor Air Pollution and Health Forum Nepal - supported by ENERGIA where it succeeded in bringing out Gendered Rural Energy Strategy 2011 Initiated Women in Drying Food and Heating Water Using Solar Dryer supported by Lemelson Foundation adopting strategy of partnering with micro finance organization Initiated School Education on Energy and Environment Project in Kathmandu Valley Carried out research study to obtain climate relevant data from the field measurement of household stoves and rural small-scale industries with support from EPA and study lead by University of California, Irvine Initiated Promoting Renewable Energy Technologies for Enhanced Rural Livelihoods Project with support from Nordic Environment Finance Cooperation through Finish Consulting Group Limited, Finland
2012	<ul style="list-style-type: none"> Conducted Training Workshop cum Write-shop on Integration of Renewable Energy Technologies in Vocational Education in Nepal in collaboration with ETC Foundation, the Netherlands Initiation of Improved Cookstoves Programme with Carbon Finance in seven districts of Far Western Development Region supported by SNV and partnership with AEPC
2013	<ul style="list-style-type: none"> Involved in "Improving Gender-Inclusive Access to Clean and Renewable Energy in Bhutan, Nepal and Sri-Lanka (ADB JFPR 9158-REG) supported by ADB and ETC Foundation/ENERGIA focused on women's entrepreneurship development through productive use of clean energy TA 7923-NEP: Gender Focused Capacity Development in Clean Energy project supported by ADB focused on women's entrepreneurship development through energy

2014	<ul style="list-style-type: none"> • Initiated the project on “The Regional Testing and Knowledge Centre (RTKC)” with support from GACC, USA • Improved Rural Livelihoods in Nepal with Pico-Hydro Electrification and Improved Water Mill with support from SNV, Nepal • Electricity Transmission Expansion and Supply Improvement Project (ADB TA 7923) • Livelihood Enhancement through Hydraulic Ram Pump in Kavre District, Nepal with support from (GEF/SGP), UNDP • Up-scaled of Hydraulic Ram Pump Project in Dhading District with support from Renewable World, UK • Promoted Renewable Energy Technologies for Enhanced Rural Livelihood in the Districts of Mid and Far Western Development Region with support from Nordic Environment Finance Corporation, Finland
2015	<ul style="list-style-type: none"> • Implementation of the project on “Promoting Women-led Enterprises for Energy Access and Local Production (WEE-Nepal)” supported by ENERGIA, the International Network on Gender and Sustainable Energy hosted by Hivos, the Netherlands • Advocated for Up scaling for Local Climate Solutions as Eco Village Development as a mean to Strengthen Pro-poor Climate Agenda in South Asia with support from DIB/CISU, Denmark • Product Development and Labelling of Clean Cookstoves and Standardized Biomass Fuels for Nepali Market with support from World bank, USA • EPA STAR – Global map of Faceable Residential Solutions, Emphasizing Stoves with Space Heating Uses Nepal Section with support from GACC, USA • Provision of Commercialization of Hydraulic Ram Pumps for the Scale Up, Poverty Alleviation and Rural Livelihood Development in Syangja District with support from Renewable World, UK • Piloted Innovating Financing Project in Nepal supported by Clean Energy Development Bank, Nepal
2016	<ul style="list-style-type: none"> • Lead organisation for implementation of the project on “Energy: Empowering Women Uplifting Lives (Advocacy Project)” funded by International Network on Gender and Sustainable Energy (ENERGIA/ Hivos), the Netherlands • Implementation organization in Nepal for the Political Economy of Energy Sector Dynamics: Gender and Energy Research Programme with support from ENERGIA/Hivos, the Netherlands and lead by Swaminathan Research Institution, Chennai, India law organization for implementation • Green and Inclusive Energy (GIE) Programme, Nepal with support from ENERGIA/Hivos, the Netherlands
2017	<ul style="list-style-type: none"> • Continued the project on “Product Development and Labelling of Clean Cookstoves and Standardized Biomass Fuels for Nepali Market” with support from World Bank, USA • Continued the project on “Advocating for Up scaling for Local Climate Solutions as Eco Village Development as a mean to Strengthen Pro-poor Climate Agenda in South Asia” with support from DIB/ CISU, Denmark
2018	<ul style="list-style-type: none"> • Continued the project on “The Political Economy of Energy Sector Dynamics: Gender and Energy Research Programme” led by Swaminathan Research Institution, India with support from ENERGIA/Hivos, the Netherlands • Continued the project on “Green and Inclusive Energy (GIE) Programme, Nepal” with support from ENERGIA/Hivos, the Netherlands • Participated in the Building Resilient Mountain Communities: Earthquake reconstruction in Dhungentar, Nuwakot district with support from ICIMOD, Nepal • Seasonal Kitchen Performance Test and Black Carbon Measurements from Biogas and other Cooking Stoves in Nepal, Panchkhal, Kavre with support from Mountain Air Engineering, USA • The emPOWER Collective Project supported by University of Illinois and John Hopkins University, USA
2019	<ul style="list-style-type: none"> • Ongoing

KEY ACHIEVEMENT HIGHLIGHTS



9,000 IWMs
Improved Water Mills

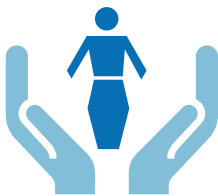


350,000 HHs
Improved Cook Stoves



41 Systems
Pico Hydro System

2
Ongoing



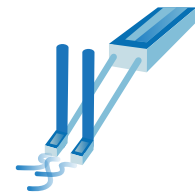
2,800
Entrepreneurs
Women Entrepreneurs

500
Ongoing



108 HHs
Eco-village Development

100 HHs
Ongoing



3000 HHs
Hydraulic Ramp Pump

2
Ongoing



CHAPTER 3

Current Programmes

Strengthening the Capacity of the Energy Sector to Deliver Gender Equality and Social Inclusion Results (TA 9334-NEP)




Objective

The TA project aims to strengthen capacity of Nepal Electricity Authority (NEA), particularly its Environment and Social Studies Department (ESSD) and the National Association of Community Electricity Users Nepal (NACEUN) in mainstreaming Gender Equality and Social Inclusion (GESI) in their program and project cycles and promoting in accessing and supporting the productive use of clean energy technologies and services by women, the poor and vulnerable.

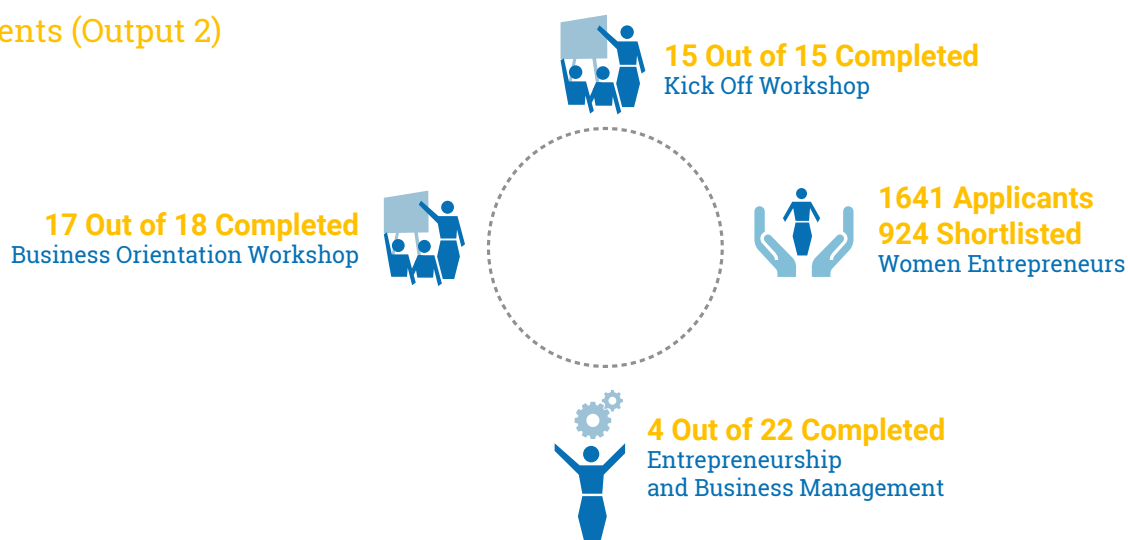


Working Areas	7 districts (Dhading, Lalitpur, Kavre, Sindhupalchowk, Dolakha, Chitwan, Sindhuli)
Duration	January 2019 – June 2020
Funded By	Asian Development Bank through support from the Japan Fund for Poverty Reduction (JFPR)
Co-funded By	Swedish International Development Agency (SIDA) in Empowering Women Engendering Energy (EWEE) project to support the strategic engagement with NACEUN and the monitoring of outcomes of output 2.
Project Partners	ADB has contracted the ENERGIA/Hivos (Humanist Institute for Co-operation with Developing Countries, the Netherlands) to implement the TA project with: <ul style="list-style-type: none"> Centre for Rural Technology, Nepal (CRT/N) Practical Action Consulting (PAC) Nepal National Association of Community Electricity Users Nepal (NACEUN): as a strategic partner for the institutional engagement with the EUCs Ricardo Energy and Environment (Ricardo)

Scope of Work

Output 1		Strengthened capacity of NEA, NACEUN and EUCs to mainstream GESI in energy projects and programs
Output 2		Enhanced productive use of clean energy technologies and services by women from poor and vulnerable households
Output 3		Developed capacity of NEA officials in new energy technology applications

Achievements (Output 2)



Adaptation at Scale Prize Project: Promoting Hydraulic Ram Pump for Rural Irrigation & Improving Livelihood & Climate Change Adaptation

Background

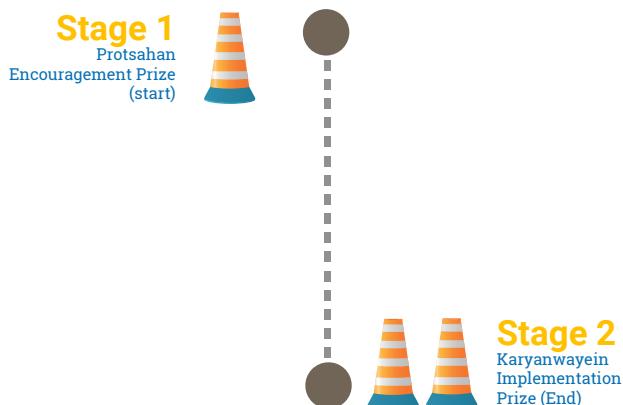
CRT/N has participated Adaptation at Scale Prize Project which is part of Ideas to Impact, a programme funded by the UK Department for International Development (DFID). The aim is to encourage eligible organisations to develop new and innovative ways to scale-up community driven climate change adaptation initiatives by offering financial rewards to organisations for scaling up existing successful adaptation projects. CRT/N has developed innovative plans and implemented project to demonstrate “Hydraulic Ram Pump for Rural Irrigation for Improving Livelihood & Climate Change Adaptation” and rewarded with both the stages of prizes: Protsahan and Karyanwayein Prize.



Outcome

Women Agricultural Group was registered during the Project initiative.

Rewards

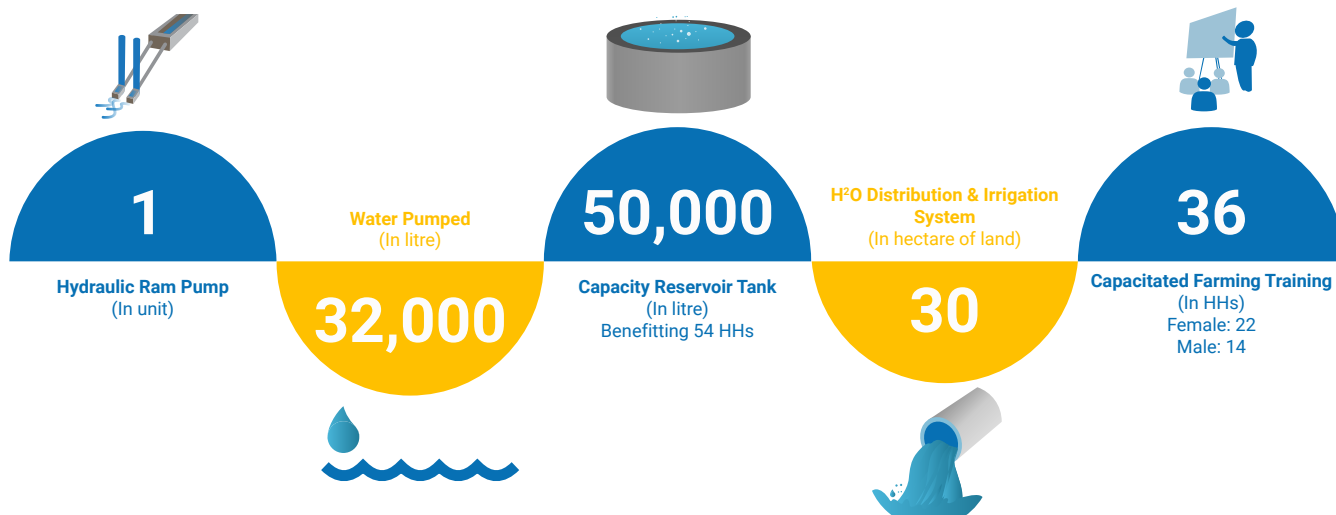


Working Area	Chetretandi Village, Madhyabindu Municipality-10, Nawalparasi District
Duration	May 2016 - January 2019
Funded By	Self-Funding and Madhyabindu Municipality-10, Nawalparasi District

Objective

To scale up and scale out the organizational initiative towards promoting Hydraulic Ram Pump in order to address the climate change issue of water scarcity for irrigation to enhance the livelihood of the vulnerable communities.

Achievements



Scaling Up Hydraulic Ram Pump to Bhutan

Background

The Hydraulic Ram Pump Technology (Hydram) is being promoted in Nepal by CRT/N since 2011 via License to manufacture and technology transfer from Alternative Indigenous Development Foundation Inc (AIDFI), Philippines. Hydram is an automatic pumping device which uses a large amount of water falling through a small head, to lift a small amount of that water to a much greater height for the different purposes like drinking water, sanitation, irrigation and livestock farming. CRT/N has installed 30 units of hydram pump so far in different locations of Nepal. Currently, CRT/N is in the installation phase of two hydram pump in two different location of Bhutan under the Bhutan Water Partnership Project supported by SGP/GEF/UNDP Bhutan. Delegates from Bhutan Water Partnership Kawajangsa, Thimpu have visited CRT/N and Hydraulic Ram Pump project sites in February 2019 to understand the technology and its feasibility in Bhutan.



Beneficiaries	Approximately 36 HHs and patient at health centre
Installations	2 units of Hydraulic Ram Pump
Areas	<ul style="list-style-type: none"> Rubesa Gewog Nyashe Gyakha, Dangchhu River BHU, Gangtey, Wangduephodrang
Project Type	Partnership Project
Funded By	SGP/GEF/UNDP
CRT/N Support	<ul style="list-style-type: none"> Technical Assessment Installation and Knowledge Transfer Operation and Management Skill Transfer Repair and Maintenance



Improving Rural Livelihoods in Nepal with Pico-Hydro Electrification and Improved Water Mill

Areas	Kavre and Makwanpur Districts
Duration	July 2018 – September 2019
Funded By	Siemenpuu Foundation, Finland



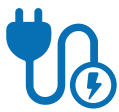
Objective

To install and operate Pico-hydro units for the basic lighting facilities and development of micro enterprises that contribute to the socio-economic enhancement

Activity

Skilled based capacity building trainings to engage rural communities in the income generating activities by supporting for the establishment of micro enterprises like Poultry, Furniture Mill, Beehive Keeping and Agro Processing Grinding Mill for the improved and sustainable livelihood.

Expected Results



16.5 kW
Total Power Generation



149
Total HHs



1
School



1
Church



776
Total Population
407
369



8
Micro Enterprises HHs



Green and Inclusive Energy Programme, Nepal Project

Background

The current development discourse emphasizes the need for green and clean energy systems for ensuring inclusive and sustainable development. The transition of a society towards green, inclusive and accountable energy system entails a strong partnership between key stakeholders (decision makers, private sectors, and other non-governmental entities). This partnership is crucial and best practices and evidences to influence policies for conducive business environment and affordable, accessible, modern or cleaner energy systems. This programme is designed to work in partnership with key stakeholders from different sectors to strengthen the lobby and advocacy capacity of CSOs to voice their concerns and meaningfully participate in decision making process. The project is expected to support national civil society organizations to advocate and lobby for policy changes, reform, and programmes to facilitate Nepal's transition towards green and inclusive energy systems.



Long term Goals

- » To meet energy (domestic as well as productive) needs of everyone
- » To mitigate climate change
- » To ensure social and economic development and to ensure productive participation of women in political, economic and social development.

Objective

To contribute to the creation of an enabling policy environment to meet the domestic and productive energy needs of the poor, women, and marginalized groups through decentralized renewable energy and clean cooking energy solutions.

Approaches

- » Collaboration
- » Co-ordination
- » Cooperation

Target Groups

Provincial	Government Agencies, CSOs
Urban Municipality	Government Agencies, CSOs, Service Providers
Rural Municipality	Government Agencies, Service Providers
Community Level	Users, Schools, Service Providers

Areas	7 Districts (Udaypur, Sindhuli, Kavre, Nawalpur, Palpa, Gulmi and Lalitpur)
Duration	October 2016 - June 2020
Funded By	ENERGIA/Hivos
Consortium Lead	CRT/N
Consortium Partners	<ul style="list-style-type: none"> • IAPHF • NACEUN • NEFEJ • RECON • Practical Action



Achievements in 2018

Capacity Development

- » The consortium partners were trained on Participatory Market Systems Development.
- » The Rural Municipalities were capacitated on three specific topics: Renewable Energy (its domestic/productive uses), Energy and Gender Nexus and Introduction to possible interventions necessary for integrating GESI into the local plans and programmes.
- » The Female Voluntary Health Workers were trained on Gender, Energy and Health implications by the Department of Health.
- » Four students and teachers from Udaypur and Chandrakot were capacitated regarding renewable energy: domestic and productive uses, energy and gender nexus and the role of students and teachers for creating awareness in their respective families and the community at large.
- » Consequently, after the teacher training and school sensitization, the need for renewable energy curriculum was realized and school curriculum for grade 1-5 was developed based on GoN guideline with joint collaboration from CRT/N, South Lalitpur Rural Electricity Cooperative (SLREC) and Rural Municipality. As a result school curriculum was approved and now

being implemented in 28 schools of Mahankal Rural Municipality, Lalitpur.

Lobby and Advocacy

The Lobby and Advocacy activities are supported by:

- » Project Ambassador, Former Minister of S&T Honourable Mr. Ganesh Shah
- » Celebrity Icon, Senior Film Artist Ms. Laxmi Giri
- » The programs were held at the Central, Provincial and Municipality Levels.

Research

Three researches have been finalized in coordination with Practical Action Nepal on the following topics:

- » Effectiveness of Subsidy to Increase Energy Access in Nepal
- » Needs, Opportunities and Challenges for Energizing Agriculture Value Chain in Nepal
- » Assessing Needs of Local Governments for Effective Energy Planning and Implementation

Regional Cookstoves Testing and Knowledge Centre (RTKC)

Background

CRT/N is a partner of the Global Alliance for Clean Cookstoves (GACC), now known as Clean Cooking Alliance (CCA), a public-private initiative led by the United Nations Foundation (UNF) to save lives, improve livelihoods, empower women and preserve the environment by creating a thriving global market for clean cooking solutions. GACC has awarded the grant support to CRT/N for the project enhancing capacity of “Regional Cookstoves Testing and Knowledge Centre” (RTKC) in 2012. In line with GACC’s mission, RTKC Nepal is dedicated to improve the testing facility and provides quality services to national stakeholders and extend its services to the regional level regarding capacity building, stoves testing, forming National Standards on Cookstoves Performance Testing and harmonizing with International Standards.

Vision

To be known as a self-sustaining RTKC, Nepal with fully equipped and trained staff

Objectives

- » Enhance testing capacity of RTKC mapping to the International Standard Organization (ISO) and International Workshop Agreement (IWA) Tiers of performance
- » Modify/upgrade stove designs and develop clean cookstoves technology
- » Establish effective knowledge dissemination and networking with other Stove Testing and Knowledge Centres at the national and regional level
- » Offer testing and monitoring services to organizations at national and regional level

Area	CRT/N Lab
Duration	Regular

Activities

RTKC lab upgraded for stove testing with new ISO protocol

- » RTKC, Nepal was upgraded for stove testing with new ISO protocol with funding support from Clean Cooking Alliance and technical support from Aprovecho Research Centre (ARC), USA in December 2018



Participation in Capacity Building Workshop

- » Expert Consultation on Building Country Capacity towards Clean Cooking Solutions workshop hosted by WHO and CCA
- » Co-hosted 3 days stove ISO testing protocol event at RTKC lab where participants from India, China, Vietnam, Myanmar, Timor, Cambodia, USA etc participated

Achievements so far

150 Underhood Performance and Emission Monitoring Tests	72 Field Emission Measurements	2 IAP Measurements
60 Seasonal Kitchen Performance Tests	67 Users Perception Surveys	54 Users Acceptance Tests

The emPOWER Collective Project

Background

In 2014, women in Sano Gaun, Balthali village of Panauti Municipality in Kavre district showed important contributions to the Hydraulic Pump project, and displayed a drive to change the status quo. This was one of the key reasons why this particular village was selected to implement the emPOWER Collective project which is an agency-based empowerment of vulnerable communities. Agency-based empowerment could potentially change their mindset and encourage them to believe in change, talk about their vision, and pursue it. CRT/N with technical support from University of Illinois and John Hopkins University, USA and financial support from Climate and Health Research Network, USA, implemented the emPOWER Collective Project in Sano Gau, Kavre.



Area	• Sano Gau, Ward 11, Balthali VDC, Panauti Municipality, Kavre District
Duration	July 2018-June 2019
Funded By	Climate and Health Research Network, USA

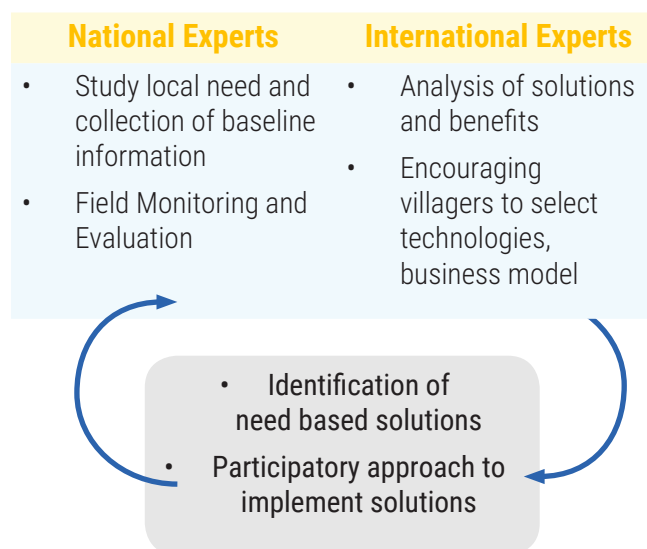
Objectives

To assess the impacts of a personal empowerment project designed to increase women’s voice and improving rural development activities.

Activities

- » Conduct a baseline study to systematically assess the local inhabitants’ participation in decision making and community activities
- » Adapt and deploy the agency-based empowerment trainings for local marginalized and women groups
- » Conduct mentoring exercises to reinforce these personal empowerment concepts and train participants to integrate these concepts into their lives
- » Use participatory exercises to develop and conduct household and community level resource needs assessment instruments

Implementation Process



Findings

1	Less research and assessment on farming techniques, money problems, and water scarcity	
2	Inadequate monitoring and mentoring element integration	
3	Few participants shared their views, progress and goals	
4	All participants were responsive when asked about their day-to-day activities/ communal issues	
5	Women in the village seem unwilling to take up decision-making roles	

Advocating for up scaling for local climate solutions as Eco Village Development (EVD) as a mean to strengthen pro-poor climate agenda in South Asia

Background

The EVD concept combines a number of solutions for poverty reduction within sustainable energy, water management, agriculture and housing. The solutions have all proven successful individually, and in several cases also together, as promoted in the EVD model project.

Objective

To strengthen development for reducing poverty in ways that limit greenhouse gas emissions (mitigate climate change) and adapt to climate change in South Asia by better including local climate mitigation and adaptation solutions.



Photo: Mahesh Shrestha

Area	Kavre District
Duration	September 2017-October 2018
Funded By	DIB/CISU/INforSE, Denmark
Regional Partners	<ul style="list-style-type: none"> • Integrated Sustainable Energy and Ecological Development Association (INSEDA), India • Climate Action Network South Asia (CANSAs), India • Center for Rural Technology, Nepal (CRT/N) • Integrated Development Association (IDEA), Srilanka • Grameen Shakti (GS), Bangladesh
Implementing Local Government Partner	Bethanchok Rural Municipality
District Project Partner	Ghatta Owner Association, Kavre
Local Project Partners	<ul style="list-style-type: none"> • Gahubali Beejbridhi Farming Group-Chyamrangbesi village • Ladkhu-Chanaute Hydram Water Users' Committee-Ladkhu-Chanaute village • Shree Ganesh Paurakhi Krisak Samuha, Kavre-Sikrigyang village

Achievements of Project

Bethanchok Rural Municipality included EVD Component in their local development plan which are as follow:

- » Discouraging use of chemical fertilizer
- » Promotion of organic farming
- » Promotion of off-seasonal farming
- » Micro-irrigation techniques under plastic tunnel
- » Waste management
- » Promotion of renewable energy technologies
- » Plastic free municipality
- » 1 house, 5 trees programme
- » 1 house -1 improved cookstove



Photo: Mahesh Shrestha

Activities

- » Strengthened evidence-base advocacy for EVD, its solutions and methods
- » Upscale the local climate and development solutions, including EVD, better known as a way to meet national climate commitments as NDCs, among people and organizations, including CSOs and officials.
- » Aware national decision-makers and climate negotiators regarding solutions that combine climate action and fulfilling of development objectives, including EVD, as well as the policy instruments for upscale of these local solutions to a level where they contribute substantially to meet national climate commitments, including NDCs.

Publications

- » ToT Manual in English and Nepali
- » White Paper on Climate Mitigation and Adaptation with EVD solutions in South Asia
- » Sustainable Energy News
- » EVD activities on INSEDA Newsletter
- » Success Case Studies

5 days Bee Keeping training conducted for 6 wards of Bethanchok Rural Municipality for 44 participants



3 days Solid Waste Management, Bio-Composting and Kitchen Garden Management training



Interaction with Local Micro Financing Institutions for Up scaling EVD Concept



3 days organic fertilizer and homemade organic pesticides preparation training



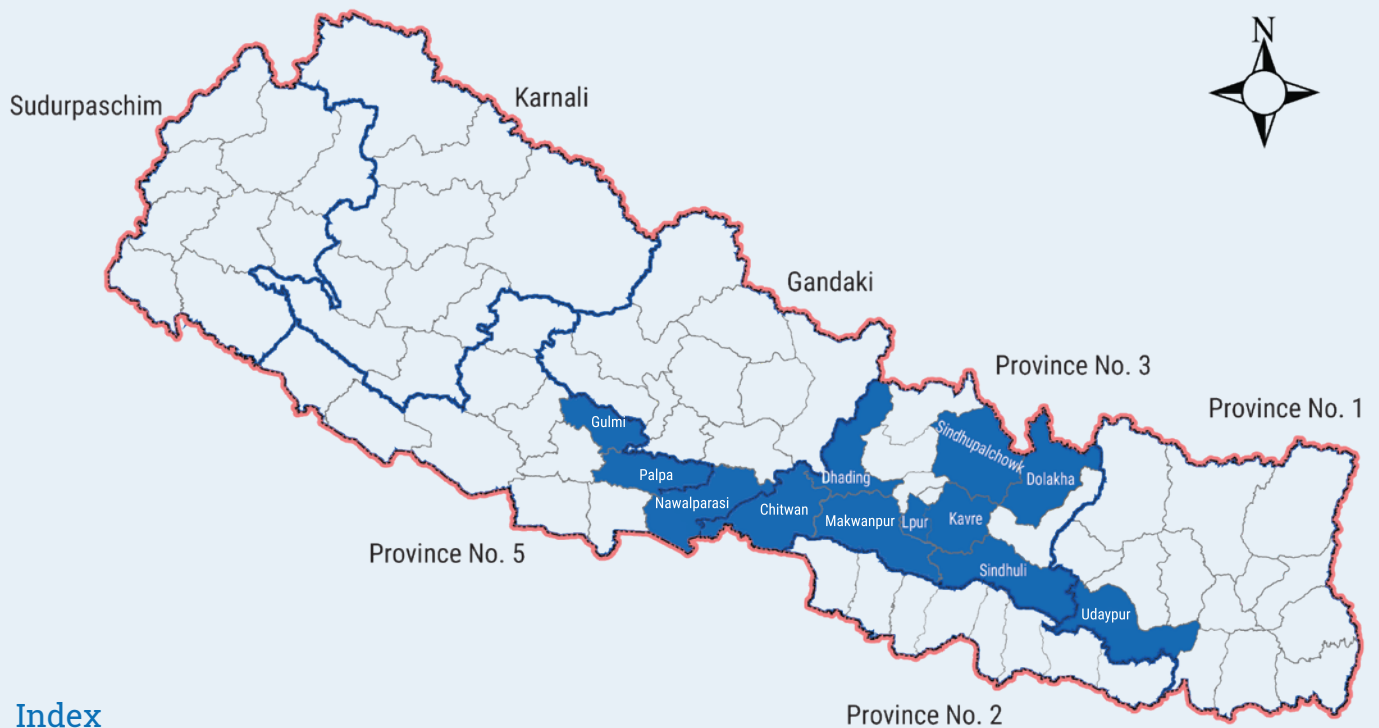
Orientation Programme on EVD, Climate Change, and Environment to the Agent of Change sensitizing 272 people

Orientation Programme on Renewable Energy Technologies and Gender and Energy Nexus




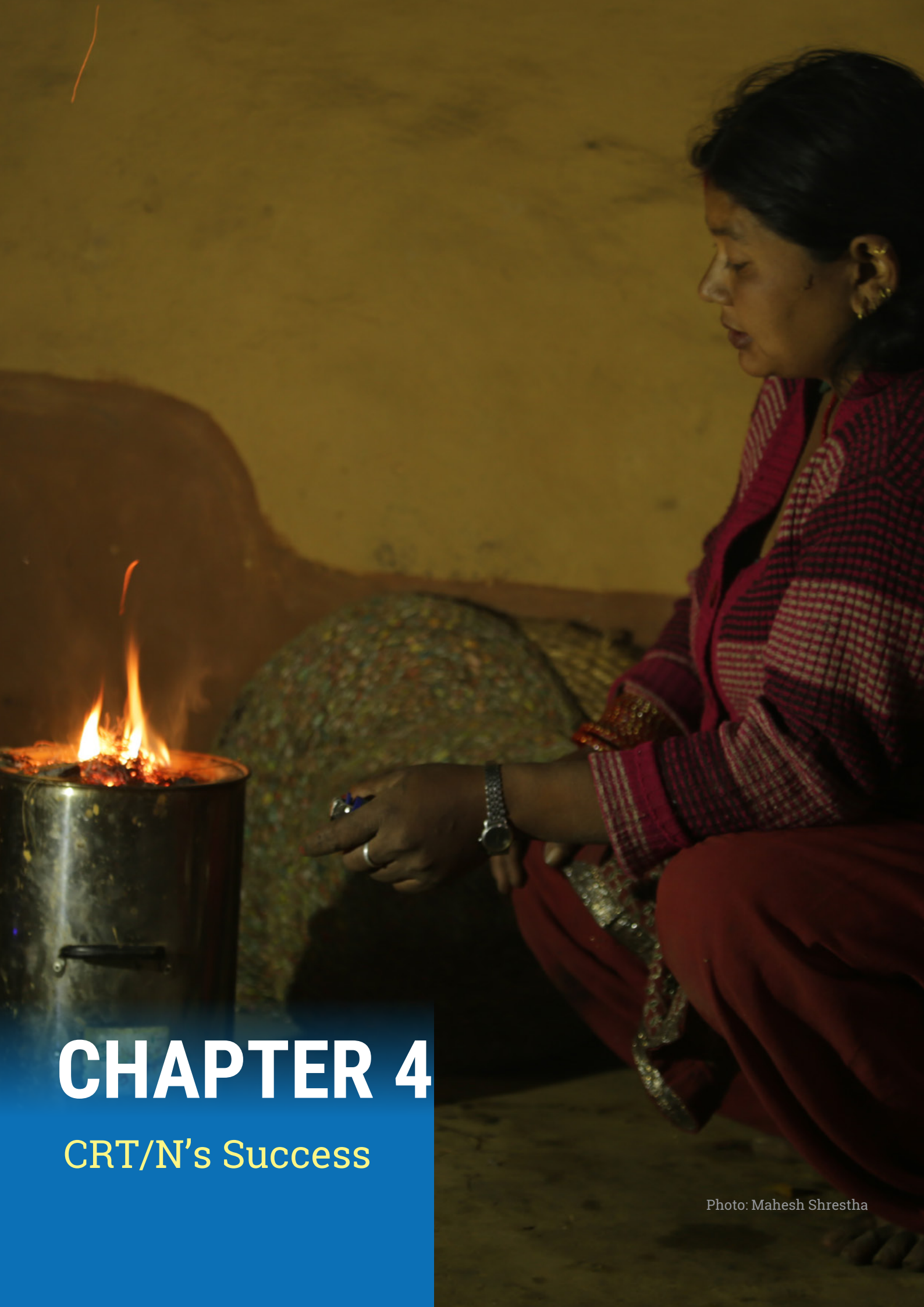
Achievements

CRT/N's PRESENT WORKING DISTRICTS



Index

-  Hydraulic Ram Pump (Nawalparasi)
-  Pico Hydro Electrification and Improved Water Mill (Kavre, Makwanpur)
-  Green and Inclusive Energy (Udaypur, Sindhuli, Kavre, Nawalpur, Palpa, Gulmi, Lalitpur)
-  Strengthening the Energy sector to deliver GESI result (Lalitpur, Kavre, Sindhupalchowk, Dhading, Dolakha, Chitwan, Sindhuli)
-  The emPOWER Collective Project (Kavre)
-  Eco-village Development Committee (Kavre)



CHAPTER 4

CRT/N's Success

Photo: Mahesh Shrestha



AWARDS & RECOGNITIONS

- » Adaptation at Scale Prize: Ideas to Impact Honorary Prize on Technology Category, UK, 2019
- » Adaptation at Scale Prize: Rewarding Innovative Climate Change Adaptation in Nepal, UK, 2018
- » Special Contribution to Biomass Energy Support Programme Award, AEPC, 2012
- » Final Nominee for Improved Water Mill Programme, Energy Globe Award, 2010
- » Ashden Award for Sustainable Energy to Improved Water Mill Support Programme, UK, 2007
- » Recognition as "Women in Energy and Water Management Project" as best practice by Wuppertal Institute for Climate, Environment and Energy (WISION), Germany, 2004
- » Ashden Award for Renewable Energy, 2002
- » Green Energy Letter of National Facilitation, Green Energy Mission, Nepal, 2001
- » CRT/N Project Registered at Expo, Germany, 2000



CRT/N's NETWORKS

- » CRT/N manages the Gender, Energy and Water Network (GEWNet) supported by International Network on Gender and Sustainable Energy (ENERGIA), the Netherlands
- » CRT/N is the National Focal Point in Nepal for International Network on Gender and Energy (ENERGIA)
- » CRT/N is the National Focal Point in Nepal for International Network for Sustainable Energy (INforSE), Denmark
- » CRT/N managed the Asia Regional Secretariat of ENERGIA from June 2007 to February 2009. The Asian countries with which ENERGIA involved are India, the Philippines, Indonesia, Vietnam, Sri Lanka, Bangladesh, Pakistan, Laos and Nepal

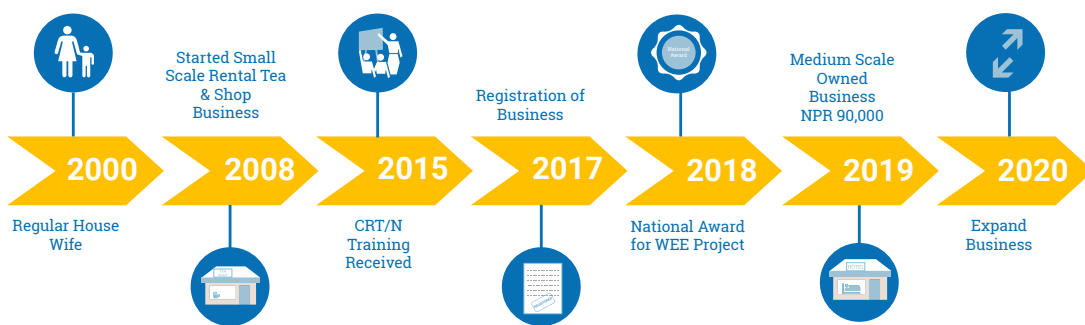


MEMBERSHIPS

CRT/N is affiliated to various specialized organizations as listed below:

- » Energy for All Partnership
- » Gender and Water Alliance (GWA), the Netherlands
- » Global Alliance for Clean Cookstove (GACC), USA
- » Global Village Energy Partnership (GVEP), UK
- » Partnership for Clean Indoor Air (PCIA), USA
- » Solar Cookers International Association (SCIA), USA
- » World Council of Renewable Energy (WCRE), Germany
- » Alliance of Civil Society Organisations for Clean Energy (ACCESS)
- » Climate Action Network South Asia (CANSA)
- » NEXUS for Development, Singapore
- » International Union for Conservation of Nature (IUCN)
- » Indoor Air Pollution and Health Forum (IAPHF), Nepal
- » Nepal Alliance for Clean Cookstove (NACC)

Journey of Purnima

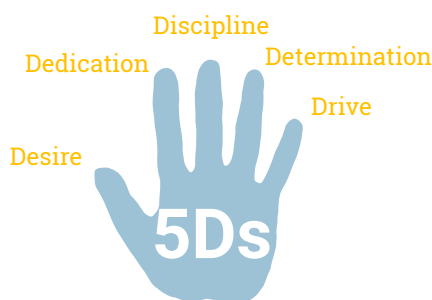


- ### Electrical Appliances
- » Refrigerator
 - » Mixture
 - » Water Pump Motor
 - » Water Boiler

Purnima Ghalan, 40, is a Hotel owner residing at Konjyosom Rural Municipality-3, Dalchowki, Lalitpur with her family of four. Initially, through the capital investment of NPR 10,000 she started a small stationary and tea shop in a rent with NPR 2,000-5,000 profits. The major reason for preliminary a business was a financial crisis.

Earlier, there was a time when local people threatened her to shut down the business and leave the area, since she originally came from different village named as Sankhu. However, now Purnima's hotel is the only one well established hotel and admired mostly by the same people.

Core elements of her success:



CRT/N trained Purnima on Entrepreneurship training through Scaling of Energy Access through Women's Economic Empowerment project for 5 days in August 2015.

“ At first, I was wondering if I should go to the training or not? What is it about? Luckily, I went and learnt a lot. After training I registered hotel, acquired PAN bill, kept hoarding board and kept proper accounting file. In overall, these all helped me to establish hotel professionally and to attract the valuable customers. ”

Way Forward

In future, she further plans to expand her hotel business for 15 plus guests with additional underground hall for the training, 4-5 employees and one more floor.

“ Personally, I encourage members of Mother Groups to start their own business according to their skills such as poultry, stitching, farming. From my own experiences and challenges, I recommend them do's and do not's of business process. ”



How I Became Successful?

“ I started a dairy with 40 litres milk, currently, I own eight dairies and I sell 2000 litres milk per day. One cannot be successful without challenges but to become a successful entrepreneur for the long run, we need to have strong determination and commitment to pursue it. For me, honesty and trust are more important than business principles. Of course we need investment, however, in my long experience, investment was never a barrier. ”

Mina, age 48, resident of Dalchoki, Lalitpur initially used to make **Khuwa** (solidified form of milk product and most desired sweet). At that time her three children were small. Additionally, it required more woods which constantly made her husband go to the forest. This ultimately made her quit making Khuwa and started small dairy in 1997.

In the early phase, she solely looked after entire work from collecting/ weighing milk, checking fat along with household chores. Eventually, there was no electricity due to which the milk used to split. Moreover, there was no access of road. Despite these challenges and loss, over the years with the support from her husband, family members, and her consistent hard work, she grew from one small dairy to eight dairies and evolved into a successful business of monthly 34,885 USD transactions.

“ My husband used to go to ask for money with the referral from the local political leaders, people used to trust male figure more than female. Once, we borrowed money from a shopkeeper and could not pay back on time. The moneylender later captured our vehicle and threatened us to throw all the milk on the road. ”

The turning point was when Mina’s elder son fully joined dairy by driving vehicle to Lalitpur and handled workers. Now, she is taking care of the overall management, whereas the father and son manage the outside matter. While making critical decisions, Mina along with her family members decides on the matters.

Mina had received skill training from Scaling up Energy Access through Women’s Economic Empowerment (WEE Nepal Project) of CRT/N supported by ENERGIA/Hivos.

Achievements so far

Achievements	Before	After
Dairy Owned	1	8
Daily Sale	40 ltr.	2000 ltr
Monthly Transaction	Loss	34,887.94 USD
Monthly Profit	Loss	1,788.69 USD
Employment	6	29 (23 Men and 6 Women)
Buffalos to Farmers	2	22
Family’s Involvement	2	5

She has built a beautiful house in Lalitpur and also bought land in Kathmandu. She has a dream of opening a large and organized dairy in her own land of Kathmandu.

She shared that the project helped her to understand the importance, efficiency of electricity and proper management of accounts, calculating monthly profit and loss, and business strategy plans.

Electrical Appliances

- » Refrigerator, Cream Separator, Milking Machine, Milk Chilling Machine



Start with Smaller Things!

Grade three passed, Shanti Thokar, age 33 is a honest and sincere resident of Dalchoki, Lalitpur. She is a true example for rural women who want to earn on her own. Success does not require higher education, huge investment and larger business. Success is the journey of small steps with continuous efforts.

Shanti as a Small Entrepreneur

Shanti always had the desire to do something on her own. This motivated her to search for opportunity at rural circumstances. She started with a single goat and later expanded into 26 goats. Consequently, her confidence and financial level boosted up. When she got married at the age of 18, she involved herself in a grocery. Slowly, Shanti learned to deal and build a relationship with regular customers and suppliers. Now, she solely manages the grocery shop. She started buffalo farming, later she added goat, beekeeping and local chicken farming.

Challenges

Ms. Thokar initially faced financial constraints, however, she got a loan from a local cooperative. Having limited knowledge on goat farming, she faced problems in preliminary phase,

later she got a training on business development training from 'Scaling up Energy Access through Women's Economic Empowerment (WEE Nepal)' Project implemented by CRT/N supported by ENERGIA, and overcame the problems. Shanti stated the training was helpful to maintain accounts and handle diseases on animals. Another major challenge is water scarcity (everyday one hour is required to fetch the water).

Future Plan

Shanti mentioned that as an entrepreneur, she wants to grow the farm and as a mother, she has a dream to provide good education to both children.

“ I want to tell every woman that small step can change their world. Its slow process however its satisfying. ”

Electrical Appliances

- » Chaff Cutter
- » Water Mill
- » Heater
- » Water Boiler

Monthly Income of Shanti in NRS



5,000
Grocery



25,000
Buffalos



15,000
Honey



5,000
Goats



50,000
Total Income



Creating Recognition through Small Entrepreneur Plans

On March 8, 2019 on the special occasion of the International Women's Day, Ramila was honored with a title "Best Entrepreneur" by Halesi Municipality, Khotang, Nepal for her outstanding work as a vegetable farmer. As part of this honor, she further received an honor certificate from the Municipality.

“ I highly feel encouraged when Municipality honored me. I am feeling more confident on what I'm doing and I will work harder in the upcoming days. ”

Situation

Due to lack of education, information, awareness and income source, women in Nepal, especially the rural women have limited mobility and control over household resources. Hence, women are confined within the house chore activities.

Journey towards Entrepreneurship

Earlier, Ramila's husband was a local contractor with the earning not sufficient to feed the family and educate the children. The family was under financial crises. Coincidentally, Scaling up Energy Access through Women's Economic Empowerment (WEE Nepal Project) of CRT/N supported by ENERGIA/Hivos was providing the entrepreneurship training to women, where she received the opportunity to understand business marketing and strategy.

It has been two years she is growing vegetables and fruits. Initially, she came across major challenges such as Insects destroying the vegetation and low self confidence. Subsequently, through skill training and continuous mentoring, she was able to overcome those issues effectively.

“ We really do not have to move abroad in search of job leaving families behind, we can simply earn in our own village with little extra effort using water, forest, land and other available local resources. ”

Way Ahead

At the moment, she has increased self-confidence with determination, dedication and desire to expand her business further with adding four extra plastic tunnels for more cultivation.

“ This would not have been possible without support from my husband. He equally gives time to me in the farm. Many women took the training but they could not do well because of lack of family support. ”



A Training That Changed Life

Nirmaya Tamang, 55 years, a local of Sikrighyang, Chhal Ganeshthan, Kavre cultivated only vegetables for her family. After receiving a training from CRT/N in collaboration with Bethanchowk Rural Municipality on 2015, she learnt to cultivate varieties of crops. She stated that she has been able to improve her traditional agricultural practices with the help of that training. She used to cultivate a few vegetables for her family consumption. Now, there has been a substantial increase in the production of a wide range of diverse vegetables in her field.

Diversifying Cultivation

Ms. Tamang grows coriander, green vegetables, radish, cabbage, cauliflower, tomatoes, beans, etc. according to the season and earns about NPR. 5,000 to 10,000. She reveals that the villagers gossiped about her cultivating and selling the vegetables. There were many from the villages who took the training along with Nirmaya but only a few of them were able to utilize it for commercial farming.

Nirmaya has grown not just vegetables but also fruits and fooders. She has even kept a tomato nursery for which she is supported by her husband Sovit Man Tamang, 52 years, to construct and maintain the tunnel. Due to her husband's health issue, now Nirmaya has to do all the works by herself.

According to Nirmaya, she sells her vegetables at her sister's store located in the main road below the village. Other vendors nearby (eg: Panauti) also purchase vegetables from her.

She had invested herself to construct the tunnel. Her family members supported to construct it. She clearly mentioned that the cost was not that high. By selling the tomatoes she has been able to earn well, about NPR. 15,000 to 20,000.

Ms. Tamang has also installed a plastic tank, a rainwater harvesting technology in her home. She shared with that technology water is collected in the monsoon which can be utilized for irrigation during winter.

“ We are very happy to get the training. We don't have to eat rotten food stored in stores. Producing vegetables ourselves has helped us to stay healthy and also earn a living by selling the surplus. Had the training been organized much earlier, this village would have been a much better place by now. ”



Improved Technologies, Improved Livelihood

Improved Water Mill

Ram Bahadur Shrestha, 66 years, a resident of Bethanchowk Rural Municipality, Dhunxharka-3, Chanaute, Kavreplanchowk is visually impaired. There is a water mill at a distance from his house. To reach the water mill one needs to cross a bridge across a river where the water mill is installed. But, Ram Bahadur can walk on his own and reach there without anyone's assistance. He goes there to grind his food grains and help other villagers to grind their feed too. CRT/N under its EVD Project, from the first phase, has been promoting Improved water mill which was installed with financial and technical support from CRT/N's earlier projects.

Ram Bahadur shares that the grinding has been easy for him and his fellow villagers after improving their traditional water mill into improved water mill.

Putali Maya Shrestha, wife of Ram Bahadur also helps him in grinding grains at the mill. Both of them are very happy to get improved water mill.

27 households family at Chanute are benefited by this improved water mill. Villagers come to the mill to grind their grains and pay for the service. The payment is utilized for the repair and maintenance of the water mill by Ghatta Management Committee.

Hydraulic Ram Pump

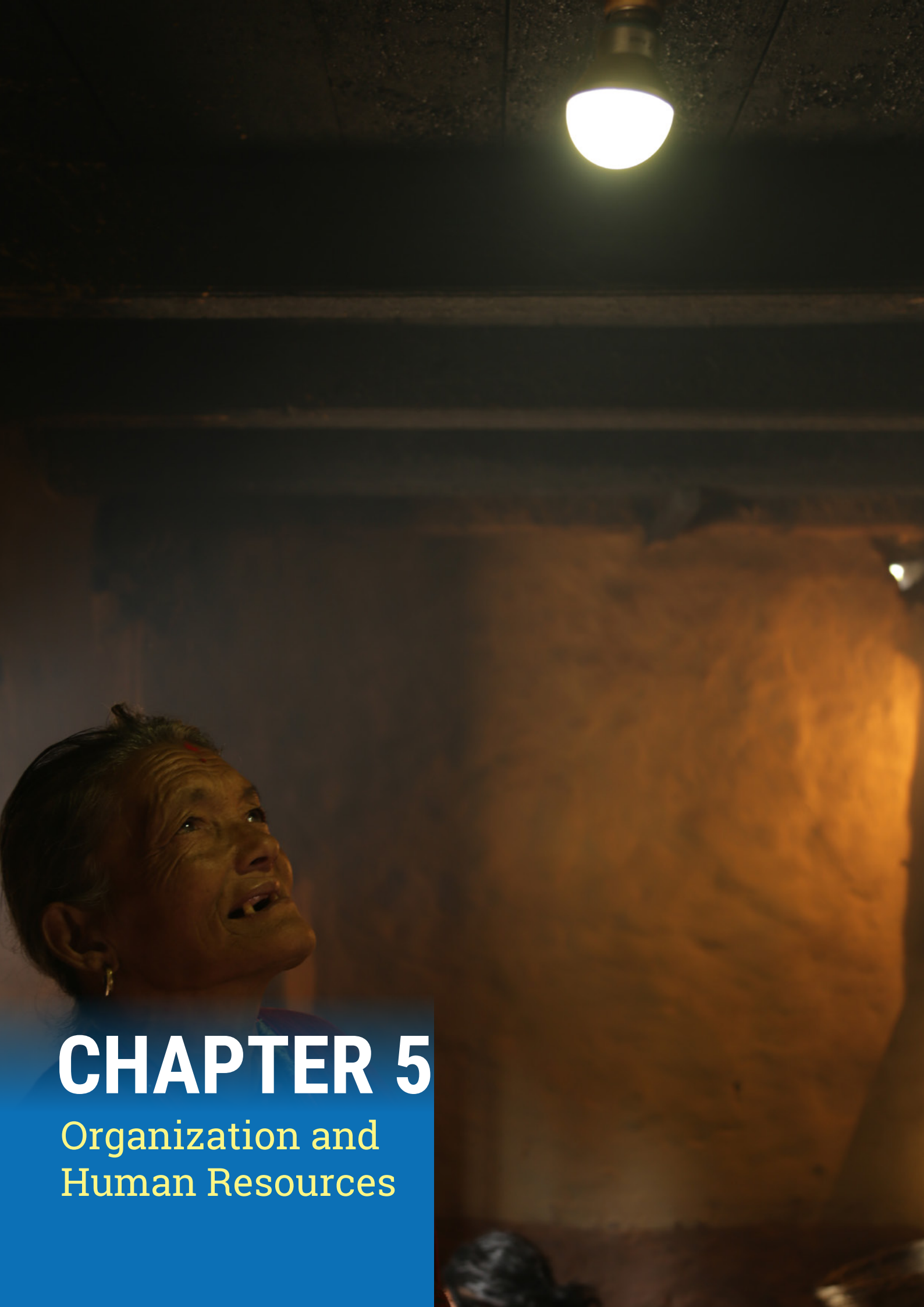
The community members of Chanaute are also getting benefit from a hydraulic ram pump (hydram) established from the support of CRT/N.

The community draws water from the tank or from collection points on pipes further downhill. The pump operates continuously to deliver water to the reservoir which typically fill up overnight and then drained down through the day. To use the scarce water, drip irrigation systems was introduced among the potential users.

Solar-based Lighting System

Putali Maya Shrestha is also using improved cookstoves, solar-based lighting system, and also has adopted homestead based vegetable farming practice. The solar-based lighting system has made their life easier than before. During the period of power-cut or load-shedding, they use the solar home system to get light.

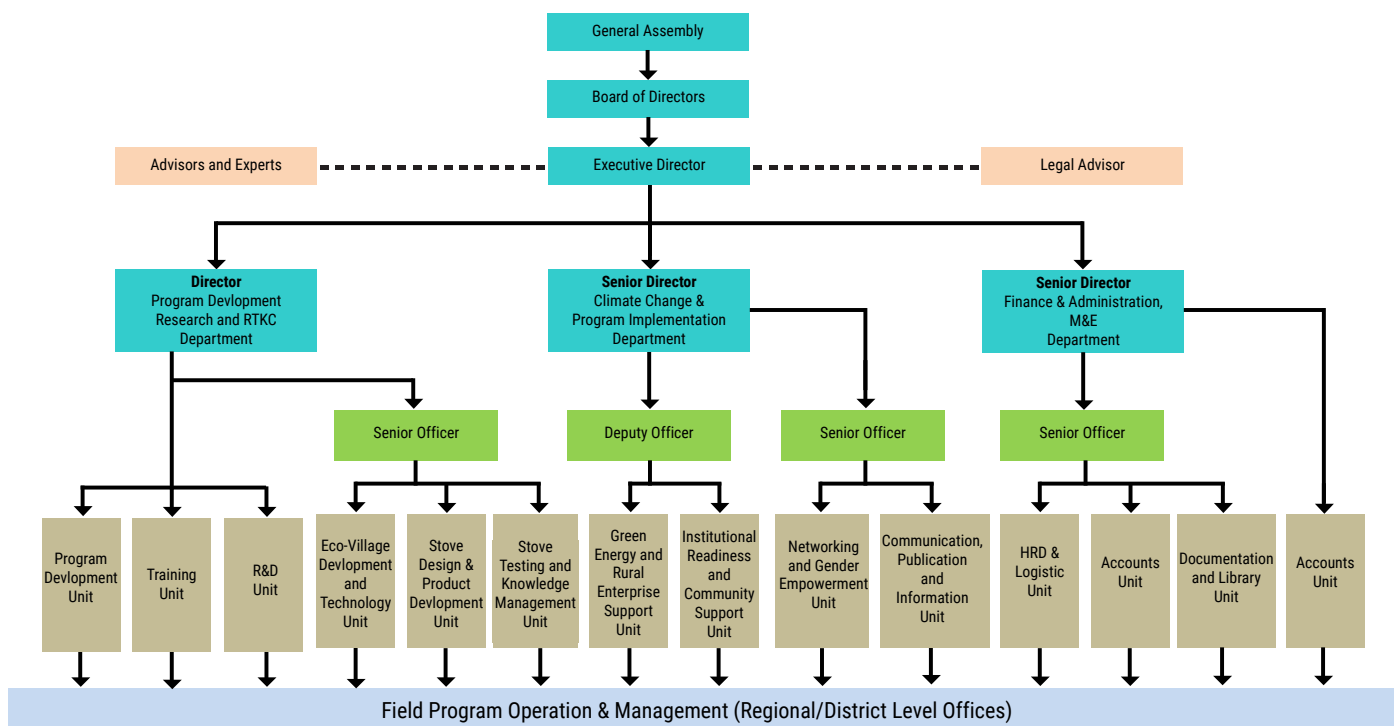
Beneficiaries like Putali Maya and Ram Bahadur including beneficiaries of 27 households of Chanute and nearby villages are improving their livelihoods by using the improved technologies.



CHAPTER 5

Organization and
Human Resources

Organizational Chart



HUMAN RESOURCES

CRT/N possesses an established pool of human resources with high level of education and experiences in diverse fields. Its staff members have long practical expertise and hands-on experience of working with communities in rural settings in connection with community development. Their key expertise includes: designing and development of programme/projects, community facilitation and mobilization, monitoring and evaluation, institutional development, networking, livelihood development, research, gender and social inclusion. CRT/N is well staffed with a multidisciplinary management team with district level coordination and support offices.

RESOURCE CENTRE

CRT/N has a Resource Centre with a good collection of books, reports, documentary and audio-visuals on renewable energy. Particularly it has a separate collection of materials related to improved Cookstove and gender, energy and water. The Resource Centre is accessible to interested individuals and institutions.

BOARD MEMBERS

Dr. Ananda Shova Tamrakar	Chairperson
Mr. Ganesh Ram Shrestha	Member Secretary
Mr. Hari Gopal Gorkhali	Treasurer
Mr. Lumin Kumar Shrestha	Member
Mr. Birjung Prajapati	Member
Mr. Damodar Karki	Member

GENERAL MEMBERS

S.N.	Name
1.	Dr. Ananda Shova Tamrakar
2.	Mr. Shankar Man Shrestha
3.	Mr. Ganesh Ram Shrestha
4.	Mr. Lumin Kumar Shrestha
5.	Mr. Kiran Man Singh
6.	Mr. Hari Gopal Gorkhali
7.	Mr. Birjung Prajapati
8.	Ms. Jolly Baidya
9.	Ms. Shanti Shrestha
10.	Ms. Kamala Shrestha
11.	Ms. Indu Shrestha
12.	Ms. Rupa Shrestha
13.	Dr. Purushottam Shrestha
14.	Mr. Damodar Karki
15.	Mr. Shyam Rai
16.	Mr. Gyanendra Raj Sharma
17.	Mr. Pawan Kumar Singh
18.	Mr. Raju Maharjan



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